DETAILED ACTION

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-16 are currently pending. Claims 17-24 were withdrawn from consideration in the August 9, 2007 Office Action.

Claim Objections

Claims 12 and 13 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 12 states that monomer E should be present in an amount of at least 50% by weight, but claim 1 from which it depends states that monomer E should be 55 to 98.99 parts by weight of the composition. Claim 13 depends from claim 12 and is thus also objected to.

Claim Rejections - 35 USC § 103

Claims 1-13 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto (US 5,385,988).

Regarding claim 1, Yamamoto (Column 17, line 46 through Column 18, line 29, Example 26) teaches an example composition comprising vinyltrimethoxy silane, water, hydroxyethyl methacrylate, and methyl methacrylate. Vinyltrimethoxy silane meets the structural limitations of silicon compound A) of the instant application with R^1 being vinyl (an alkenyl with 2 carbons), X being methoxy (an alkoxy with 1 carbons), m=1, n=1, o=0, r=0, and s=3. Hydroxyethyl methacrylate meets the structural limitations of

compound D) of the instant application with R^3 being a methyl group and R^4 being an aliphatic radical with 2 carbon atoms having a hydroxy group. Methyl methacrylate meets the structural limitations of compound E) of the instant application. In claim 1 of the instant application, the only components which must be present are A, B, D and E. Components C and F can be present at 0 parts by weight of the composition. Example 26 (Columns 17 and 18) teaches that the silicon compound and the water are reacted first and then the methacrylates are added. The relative proportions of vinyltrimethoxy silane, water and hydroxyethyl methacrylate meet the proportions of the instant claim. Yamamoto does not explicitly teach how much methyl methacrylate is added to the composition. However, Yamamoto (Column 7, lines 30 through 39) teaches that the radical-polymerizable vinyl compound (the methacrylates) is present in a range of 1 to 99% by weight of the composition and that the silane compound is present in a range of 99 to 1% of the composition. Yamamoto (Column 1, lines 44-50) further teaches that the relative proportions of the silicon compound and the acrylic resin determine the properties of the composite composition such as rigidity, transparence, toughness and workability. The composition of Example 26 of Yamamoto either meets the proportions of the instant claim or alternately it would be obvious to one of ordinary skill in the art to vary the proportion of the methyl methacrylate to obtain a composite material with a desired level of transparence and workability. With the range of adjustability of the silane to methacrylate compounds, the relative proportions of the compounds are met.

Regarding claim 2, vinyltrimethoxy silane (of Example 26) meets the limitations of the silicon compound of formula (Ia) of the instant claim with R^1 being vinyl (an alkenyl with 2 carbons), X being methoxy (an alkoxy with 1 carbons), n=1, and s=3.

Regarding claim 3, Yamamoto (Column 5, lines 49-52) teaches that the silicon compound can be a combination of a silane compound of formula (II) and a silane compound of any of formulas (IV) to formula (VII). A combination of a formula (II) compound and a formula (V) compound meets the limitations of the instant claim. For example, ethyltrimethoxysilane is a formula (II) compound that meets formula (Ib) of the instant application with R^2 being an alkyl with 2 carbons, X being methoxy (an alkoxy with 1 carbons), o=1 and s=3. Vinyltrimethoxysilane is a formula (V) compound that meets formula (Ia) of the instant application with R^1 being an alkenyl with 2 carbons, X being methoxy (an alkoxy with 1 carbons), n=1 and s=3.

Regarding claim 4, vinyltrimethoxy silane meets the limitations of the silicon compound of formula (Ic) of the instant claim with R^1 being vinyl (an alkenyl with 2 carbons), and X being methoxy (an alkoxy with 1 carbons).

Regarding claims 5 and 6, Yamamoto (Column 3, line 46 through Column 4, line 7) teaches that the preferred silane compounds meet one of the formulas (II) through (VIII). γ-Methacryloxypropyltriethoxysilane is a silane compound of formula (IV) with R^7 being a methyl group, p=3, n=0, and R^6 being a hydrocarbon radical of 2 carbon atoms.

Regarding claim 7, Yamamoto (Column 6, lines 43-49) teaches that the hydrolysis of the silane compound is carried out at a temperature ranging from room

temperature (~20°C) to 120°C. This range overlaps the range of the instant claim. In Example 26 (Columns 17 and 18), the reaction is carried out at 70°C.

Regarding claim 8, Yamamoto (Column 6, lines 39-41) teaches that the reactant is dissolved homogeneously in the hydrolysis reaction.

Regarding claim 9, Yamamoto (Column 6, lines 43-49) teaches that the hydrolysis of the silane compound is carried out for a period of about 30 minutes to about 24 hours. This range is fully encompassed by the range of the instant claim.

Regarding claim 10, as stated above, Yamamoto (Example 26, Columns 17 and 18) teaches hydroxyethyl methacrylate (a hydroxyalkyl (meth)acrylate) as one of the two methacrylates of the composition.

Regarding claim 11, Yamamoto (Column 2, lines 16-50) teaches that there can be more than one methacrylate as the radical polymerizable vinyl compound. Yamamoto further teaches glycidyl methacrylate as one of the useful monomers.

Regarding claims 12 and 13, as stated above, Yamamoto (Example 26, Columns 17 and 18) teaches methyl methacrylate (ethylenically unsaturated monomers) as one of the two methacrylates of the composition. This meets the limitation of formula (III) of claim 12 with R^3 being a methyl group and R^5 being an aliphatic radical with 1 carbon.

Regarding claim 16, Yamamoto (Example 26, Columns 17 and 18) teaches adding 0.15 parts by weight of AIBN (the same free-radical polymerization initiator as is preferred in the instant case).

Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto, in view of Owens (US 3,793,402).

Regarding claim 14, as stated above Yamamoto teaches a composition that meets the limitations of claim 1, since compound F can be present at 0 parts per weight. The composition contains a large percentage of monomer E, which as taught above, can be methyl methacrylate. Yamamoto (Column 21, lines 55-60) further teaches that the composite compositions are useful as windowpanes. Yamamoto does not teach adding impact modifiers to the composition. Owens (Column 1, lines 27-66) teaches adding impact modifiers to rigid thermoplastic polymer compositions, which are useful as glazing material, in order to improve the impact resistance of the rigid materials. Owens (Column 11, lines 35-51) further teaches that the rigid thermoplastics are copolymers that contain 50 to 100% of an alkyl methacrylate monomer, preferably methyl methacrylate. The impact modifiers comprise polymerized methyl methacrylate (Column 12, lines 44-48) and are thus a copolymer of monomer E. It would be obvious to one of ordinary skill in the art to add the impact modifiers of Owens, to the composition of Yamamoto, to improve the impact resistance of the methyl methacrylate copolymer glazing/windowpane composition.

Regarding claim 15, Owens (Column 2, lines 1-58) teaches that the impact modifiers can be added at about 4 to 90 wt.% of the impact modifier/rigid thermoplastic composition. Owens (Column 10, lines 30-73) further teaches that an emulsion of the impact modifier (referred to as the multi-stage polymer) can be added to the rigid thermoplastic monomer mix, in order to yield the desired rigid thermoplastic polymer.

The outer layer of the impact modifier is preferably made from methyl methacrylate (Column 8, lines 63-73) and thus the emulsion would contain methyl methacrylate as compound F. The amount and composition of the impact modifier emulsion would be a results effective variable that would determine the impact strength of the rigid thermoplastic polymer. It would be obvious to one of ordinary skill in the art to vary the amount and composition to meet a desired level of impact strength for the rigid thermoplastic composition.

Response to Arguments

Applicant's arguments filed November 9, 2007 have been fully considered but they are not persuasive.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the composition as part of a laminated glass) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). The laminated glass was part of a non-elected set of claims, which were withdrawn in the August 9, 2007 Office Action.

Applicant argues that the composition of Yamamoto is not a polymerizable composition, but rather a composite composition. However, the composite composition is formed after the polymerizable composition is polymerized (Abstract and Example 26). Thus, prior to polymerization the composition is a polymerizable composition. As stated in this Office Action and the August 9, 2007 Office Action the composition of

Yamamoto either meets or can be obviously modified to meet the limitations of Claim 1. Applicant has provided no data to show that the polymerizable composition of Yamamoto does not meet the limitations of claim 1.

Applicant argues that there is no evidence that the combination of Yamamoto and Owens would result in a polymerizable compound. However, the compositions of Yamamoto and Owens are both polymerizable compounds with similar amounts of methacrylate monomers and thus the addition of the impact modifiers of Owens, to the composition of Yamamoto, should still result in a polymerizable compound. Applicant has shown no data that this is not the case.

Applicant argues that the amount of E) in claim 12 does not conflict with the amount of E) in claim 1. However, the amount of E) in claim 12 broadens, rather than narrows the amount of E) from claim 1. Thus, claim 12 is in improper dependent form for failing to further limit the subject matter of a previous claim

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elizabeth Robinson whose telephone number is (571)272-7129. The examiner can normally be reached on Monday- Friday 8 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney can be reached on 571-272-1284. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ear
/E. R./
Examiner, Art Unit 1794

/Carol Chaney/
Supervisory Patent Examiner, Art Unit 1794